

Affordability of Water Service: What Does it Mean? How is it Measured? Why Does It Matter?

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Affordability: What Does it Mean?

- ▶ Affordability is a subjective concept
 - It is normative; it involves judgment
 - There is no right or wrong measure
 - There is no bright line; there is a continuum
- ▶ Affordability concerns large as well as small systems
- ▶ Affordability is a growing concern
 - Water bills already rising at pace > CPI
 - Many future upward pressures on water costs
 - Real incomes of the poor are going down

Three Levels of Applicability

- ▶ Affordability at National Level
 - Regulatory context (I.e., is a rule affordable?)
 - Financial support (e.g., is SRF adequate?)
- ▶ Affordability at Utility or Community Level
 - Do collectable revenues meet cost recovery?
 - Will lenders offer needed capital financing?
- ▶ Affordability at Household Level
 - Can increased water bill be paid? (Will it?)
 - What does household sacrifice to pay water bill?

Affordability Begins at the Household Level

- ▶ Affordability ultimately concerns households, because households ultimately bear the costs
- ▶ Affordability not solely an issue for regulatory concerns
 - Pertains to any factors that drive water costs up to levels that adversely affect households
 - E.g., infrastructure renewal costs, security-related expenses, new source development
- ▶ Affordability concerns apply to households served by
 - Large urban systems
 - Small rural systems (and everything in between)

A Definition of Affordability

- ▶ Household monthly water bills that do not impose **undue economic hardship** on low or fixed income households in the service area.
- ▶ Water rates that are low enough that low income households do not need to **displace other essential services** (e.g., medical care, food, or energy) to pay their water bills
- ▶ Affordability is subjective – one needs to determine:
 - What types and levels of economic tradeoffs in households constitute an undue hardship.
 - What constitutes a “low income” household.

What is a Low Income Household, and How Many Are There?

- ▶ Federal Poverty Level (FPL) is \$18,600 (for family of 4, in 2002)
- ▶ 200% of FPL needed for a low income family to meet its basic needs
- ▶ 22.5 million households (~ one-fifth of U.S.) are at or below 125% of FPL
 - 7.2 million at <50% FPL
 - 9.6 million between 50% and 100% of FPL

Evidence of Economic Hardships for Low Income Households

About 1 person in 5 lives in a household that had at least one difficulty meeting basic needs (Bauman, 1998)

- ▶ Did not pay full gas, electric, oil: 9.9%
- ▶ Needed to see dentist but did not: 7.0%
- ▶ Did not pay full mortgage or rent: 6.8%
- ▶ Needed to see doctor but did not: 5.7%
- ▶ Not enough food to eat: 4.8%
- ▶ Telephone disconnected: 3.8%
- ▶ Evicted for nonpayment of rent: 0.4%

Affordability at the National Level

- ▶ Arises in context of whether a national drinking water regulation is “affordable”
- ▶ Under SDWAA, there is specific provision for EPA to define a “Small System Variance Technology”
- ▶ **IF** EPA finds none of the BATs for rule “affordable”, then EPA may define a “variance technology”
 - Variance technology costs less than BAT, but also delivers less contaminant removal
 - States can opt to allow a small CWS to use variance technology in lieu of BAT

Issues with National-Level Affordability Determinations

- ▶ All regulations to date found by EPA to be affordable
 - Lack of a variance option for the arsenic rule brought the issue to a head for small systems
 - NDWAC panel reviewed EPA approach and made several recommendations (discussed later)
- ▶ Affordability NOT just a concern for small systems
 - Low and fixed income households in larger systems also burdened by water rate increases
 - All utilities concerned about fairness (equity) and fiscal issues (i.e., nonpayment, access to capital)

Affordability and National Financial Assistance Programs

Affordability also relevant for determining whether **financial assistance programs** are adequate to meet the needs:

- ▶ Is the State Revolving Fund (SRF), and other federal assistance programs that provide grants or loans to water systems, large enough and well enough targeted to address the needs?
- ▶ Are additional financial support mechanisms targeted at households in need necessary or desirable for assisting low and fixed income households facing unaffordable water bills?
 - E.g., a “LIWAP” modeled after LIHEAP federal assistance program

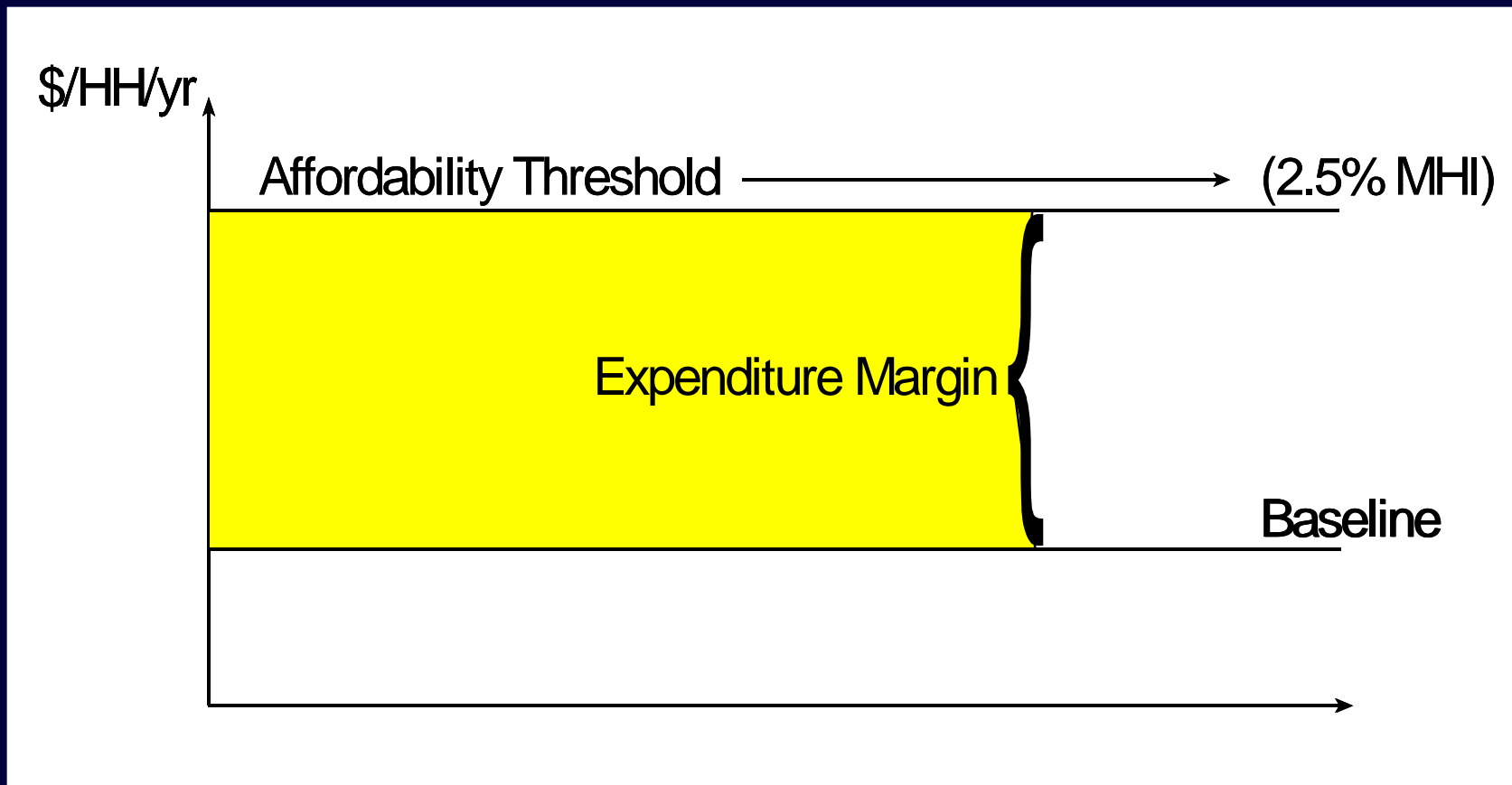
Affordability at the System Level

- ▶ Can (and will) customers pay increased rates to meet increasing revenue needs?
 - Many upward pressures on utility costs
 - Regulations, infrastructure renewal, security, limited water sources → cumulative cost impacts
 - Rate hikes unpopular with local elected officials
- ▶ Implications for long-term viability of a water utility
 - Access to capital needed to attain compliance, renew infrastructure, improve security, etc.
 - Ability of system to be sustainable into the future

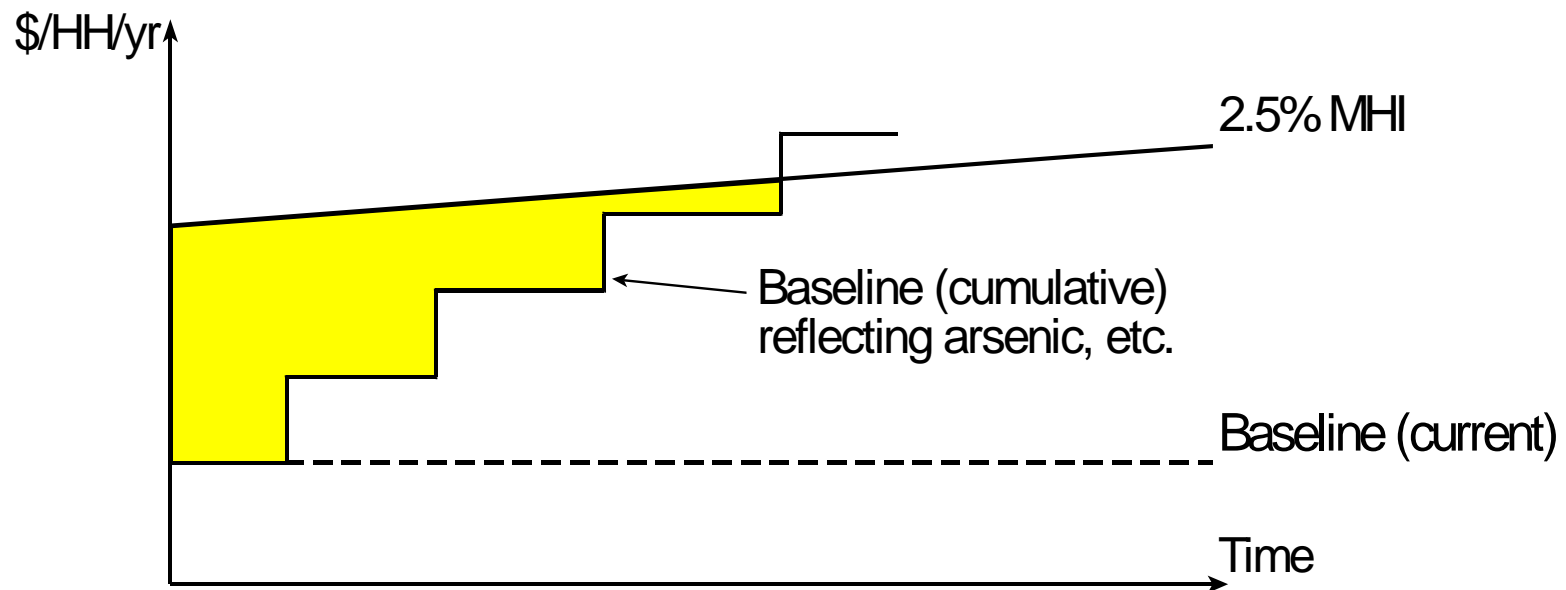
EPA's Variance Technology Affordability Formula

- ▶ Affordability threshold: Is total water bill $> 2.5\%$ median household income (MHI)
 - Why 2.5%? Why MHI?
- ▶ Total water bill = “national expenditure baseline” + EPA's estimated compliance cost
 - Baseline: is it accurate? complete?
 - Compliance costs based on EPA estimated average across ALL systems in size category (not just the per system costs in those CWS impacted by a rule)
- ▶ “Expenditure margin” = affordability threshold (2.5% MHI) minus national expenditure baseline water bill

Expenditure Margin



Margin Eventually Evaporates



No Single Metric of Affordability Can Suffice

No single numeric criterion can provide a good indication economic hardship

- ▶ EPA uses median household income (MHI), but
 - MHI is not strongly correlated with the incidence of poverty or other measures of economic need.
 - E.g., MHI weakly correlated with the percentage of households (HH) in poverty, or living in poverty areas (areas with > 20% HH in poverty).
- ▶ Therefore, MHI by itself is not an accurate measure of the ability of a community to afford increased water costs.

Multiple Criteria Much More Informative

Scott Rubin proposed the following national criteria for a community to demonstrate undue economic hardship:

- ▶ Median household income (MHI) less than or equal to 65% of the national MHI
- ▶ Poverty rate that is twice the national average
- ▶ Two-year average unemployment rate that is twice the national average
- ▶ Typical residential water bill would be 2.5% of MHI in the community; or
- ▶ Typical residential water bill would double.

Using Multiple Criteria

Applying these multiple criteria to existing data, Rubin's results show that

- ▶ Approximately 13% of potentially affected small water systems, or 15% of potentially affected counties, might meet the criteria for economic hardship.
- ▶ Between 10% and 20% of small water systems affected by the new arsenic regulation might meet criteria for demonstrating an undue economic hardship

Small System Issues: Rural versus Metro Areas

Significant differences exist between communities served by small water systems in rural versus more urban settings

- ▶ Levels of income and poverty significantly different
 - MHI is 25-30 percent lower in rural than metro area systems;
 - Poverty rates are 50-60% higher in rural than metro area water systems;
- ▶ Rural water systems are substantially smaller than those located in MAs.

Rural Areas are a Focus for Small System Affordability Problems

- ▶ Essentially all small water systems that are at risk of being unable to afford increased water costs are located in non-metropolitan areas.
 - One out of every eight small water systems in non-metro areas is economically at risk
 - One out of every 200 small water systems in MAs faces a similar affordability risk.

Affordability is an Issue for Larger Water Systems Too!

- ▶ Ultimately, the focus is on household level hardships, whether the household is in a small system or a larger utility
- ▶ The core concern is whether a high per household burdens imposed by an elevated water bill will be worth the expense
- ▶ Will the health risk reduction benefits the households receive be worth the cost and related tradeoffs these families will need to bear?

What Water Utilities Can Do to Help

- ▶ Small systems: limited opportunities to redistribute cost burdens
 - Few non-poor households to help shoulder the load
 - High per household bills already
- ▶ Larger utilities often have more options
 - Larger and more economically diverse customer base: may support lifeline rates
 - Other agencies and assistance resources

What Are Large Systems Doing to Help?

Most utilities (~80%) have at least 1 program aimed to help low income customers

- ▶ Spread payments over time: 76%
- ▶ Referral to private, non-utility agency: 54%
- ▶ Referral to local government agency: 49%
- ▶ Education: 35%
- ▶ In-home conservation assistance: 25%
- ▶ Special billing arrangements: 21%
- ▶ Change in rate charged (e.g., lifeline rate): 8%

NDWAC Affordability Panel

Suggested Exploring a LIWAP

- ▶ A federal program targeted to low income households
 - LIWAP: “Low Income Water Assistance Program
 - Model after existing Low Income Energy Assistance Program (LIHEAP)
- ▶ LIWAP approach may not be very promising
 - Few federal dollars in an era of record budget deficits
 - LIHEAP reaches only 20% of eligible households
 - LIWAP likely to reach even smaller % of the needy (because a much smaller fraction of the poor pay a water bill than pay directly for heating or energy)

Conclusions

1. Affordability is a real and growing problem for many water utility customers
2. There are a large number of households who face tough choices and real economic hardships
3. There probably are adverse public health and social consequences from increasing water costs
4. For some low income households, the adverse consequences of increased regulatory costs might outweigh the benefits (an open empirical question)
5. There are no easy answers for resolving these problems

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